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# Rhodora

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## ON THE RULES OF BOTANICAL NOMENCLATURE ADOPTED BY THE VIENNA CONGRESS.

### INTRODUCTORY.

No subject connected with systematic botany has in recent years been more earnestly discussed than the nomenclature question. Indeed, the prolonged and detailed controversies regarding this matter must have been wearisome to many persons who, although interested in plants, have had no leisure or desire to go into bibliographical technicalities. To such persons, however, as well as to the professional taxonomist, it should be a source of gratification that a considerable step has been taken toward international agreement on the points at issue.

Before the rules and recommendations adopted by the Vienna Botanical Congress are here presented, it may be well to advert very briefly to the peculiar difficulties which have been involved in the nomenclature question and to recall the circumstances of the international meeting at Vienna.

For many decades it has been almost universally felt that botanical nomenclature should rest in a general way on the principle of priority of publication, or in other words, that the name of a plant was the first one assigned to it. Nearly all botanists of note have readily assented to this general idea, but great difficulties have arisen regarding the precise limitations which should be imposed upon the principle. Thus, botanists of past generations, including such great leaders as the De Candolles, Bentham, the Hookers, Gray, von Martius, Eichler, Baillon, and others, have followed the principle of priority, yet they have made frequent exceptions based on considerations of taste and convenience as well as practicality.



With the expansion of the subject the difficulty of agreement on these exceptions has increased and some recent writers have been disposed at times to criticise rather harshly the earlier botanists for making any exceptions whatever. It should be noticed, however, that even the more strenuous of these reformers themselves admit certain exceptions. They have found it necessary, for instance, to fix initial dates, and to rule out certain names as too vague in their definition or too uncouth in their form to be accepted.

Ideas as to the best mode of establishing rules or reaching a general agreement regarding the necessary exceptions to the bald principle of priority have differed widely and given rise to lively controversy. To some it has seemed best to devise an ideal system and then, without much reference to the wishes or convenience of their colleagues, to apply it in local publication. The idea of such writers has been, if we understand it rightly, that a system of rules if devised with sufficient care would ultimately gain adherence and be recognized as worthy of general adoption.

To the vast majority, however, it has been clear that the subject was a broad one involving much mutual sacrifice before the now divergent usages at different botanical centres could be brought into harmony. It was also decidedly an international question. If our Latin botanical nomenclature has any real significance it is that botanists of remote regions and different nations may have a common technical language. It was therefore evident that rules devised in one country stood exceedingly little chance of adoption in others and that the whole question could be settled only by a patient effort at international understanding.

In this way uniformity can be attained gradually. In the first place it should be possible to reach agreement on some of the more obvious rules, upon such in fact as are sufficiently evident in the present state of botanical classification to make not only their need of settlement but the particular way in which they should be decided, clear to the majority of systematists of different nations. If such general principles can be decided and the majority of botanists convinced of their fairness, much will have been accomplished. Attention can then be turned to minor details on which opinions are still widely divergent, and, as each successive matter reaches such clearness as to make its solution possible by international agreement, it can then be taken up and decided by subsequent international gatherings.

The great advantage of such a method of gradually getting all nations into harmony will be evident to every thoughtful and broad-minded person interested in botany. In fact it appears to be, if not the speediest method imaginable, at least the most practicable — the way, in fact, which will bring us to the desired uniformity with the least friction, with the least feeling of injustice, and the minimum production of needless synonyms.

For the last fifteen years there has been a growing desire for an international meeting of representative botanists who should give the matter of nomenclature careful consideration and come if possible to some agreement on the fundamental rules to be followed. This feeling took definite form in the year 1900 when preliminary sessions of such a gathering were held in connection with the Paris Congress of botanists. At this meeting a bureau was formed for the organization of an International Botanical Congress to be held at Vienna in June, 1905.

A commission of forty-seven botanists, representing all the more important countries of the world was also formed, to whom advisory power in the arrangements for the Vienna Congress was intrusted. This commission was well selected to include persons not merely of high standing in systematic botany but representing the most diverse views on nomenclature. The commission worked in harmony and special credit is due to Prof. John Briquet of Geneva, the reporter-general, who devoted for some years much of his time to the arrangements for the congress.

It was early decided that the proper basis for any new group of rules would be the time-honored Paris Code of 1867, often called the De Candolle Code. Botanists of the world were invited to submit their propositions for the amendment and improvement of this code and ample time given them for the purpose. Many responded with carefully elaborated propositions and suggestions. Months before the congress was called together the reporter-general published a detailed statement, not only of all the new suggestions, which had been received, but of all the important propositions published on the subject of botanical nomenclature since 1867, the date of the old code. These matters were lucidly presented in a large quarto publication printed in parallel columns and giving an admirable means of comparing the different systems proposed.

Representation at the Vienna Congress was freely offered to all



the leading botanical establishments of the world, to botanical and natural history societies and academies, and finally to all those botanists who had offered amendments to the older code. Circular after circular was issued and it would be difficult to conceive of any expedient which was not employed to make the congress representative and render its proceedings intelligent and thoroughly impartial.

To the great credit of our science, it may be said without reservation, that the leading botanical establishments of the world took the congress seriously. There met at Vienna between five and six hundred botanists. A week was spent in the various sessions of the congress. During this time the systematists met daily in prolonged and very earnest sessions for discussion and legislation on the nomenclature matter. They were permitted to speak in French, English, or German, and the substance of their remarks was promptly translated into each of the other two of these languages. The meeting was exceptionally fortunate in its chairman, Prof. Charles Flahault of Montpellier, whose quick understanding of complicated situations, skilful generalship of the polyglot debates, and obvious impartiality commanded universal respect and gained general commendation. Every opportunity for free discussion was given so far as time permitted.

Several readers of RHODORA have expressed the wish that the rules adopted by the Vienna Congress should be printed in our journal and the English version is herewith given. The list of generic names, which, notwithstanding technical lack of priority, it was decided to retain, includes about four hundred names. Lack of space does not permit the reprinting of this list in full but the names are here given which apply to our New England flora.

It will be a matter of great interest to the readers of RHODORA to learn that many of the leading botanical establishments of the world have already signified either officially or unofficially their intention to accept the Vienna rulings, indeed this acceptance has been so general as to render divergent practice hereafter merely local and provincial.

A question, which has been very frequently asked, is how much change these rules will entail in current usage. It is very difficult to give any precise answer, but, in a general way, it may be said, so far as the Grayan nomenclature common in New England is concerned, the adoption of the Vienna rules is likely to necessitate change

of 3 to 5 per cent. of generic names and between 10 and 20 per cent. of specific names. Persons judging of this matter are specially urged to make careful distinction between changes caused by the new rules on the one hand and the host of alterations on the other which are rendered necessary by new light upon plant affinities, the limitation of species, division of confused genera, etc.—alterations which are botanical rather than nomenclatorial in their nature.

## International rules for Botanical Nomenclature chiefly of Vascular Plants.

### Chapter I. General considerations and leading principles.

Art. 1. Natural history can make no progress without a regular system of nomenclature, which is recognized and used by the great majority of naturalists in all countries.

Art. 2. The prescriptions which govern the exact system of botanical nomenclature are divided into *principles*, *rules* and *recommendations*. The principles (art. 1–9, 10–14 and 15–18) are the foundation of the rules and recommendations. The rules (art. 10–58), destined to put in order the nomenclature which the past has bequeathed to us, and to form the basis for the future, are always retroactive: names or forms of nomenclature which are contrary to a rule cannot be maintained. Recommendations bear on secondary points, their object being to ensure for the future a greater uniformity and clearness in nomenclature: names or forms of nomenclature contrary to a recommendation are not a model to copy, but cannot be rejected.

Art. 3. The rules of nomenclature should neither be arbitrary nor imposed by authority. They must be simple and founded on considerations clear and forcible enough for everyone to comprehend and be disposed to accept.

Art. 4. The essential points in nomenclature are: 1. to aim at fixity of names; 2. to avoid or to reject the use of forms and names which may cause error or ambiguity or throw science into confusion.

Next in importance is the avoidance of all useless creation of names.

Other considerations, such as absolute grammatical correctness, regularity or euphony of names, more or less prevailing custom,



respect for persons, etc., notwithstanding their undeniable importance are relatively accessory.

Art. 5. No custom contrary to rule can be upheld if it leads to confusion or error. When a custom offers no serious inconvenience of this kind, it may be a ground for exceptions which we must however abstain from extending or copying. Finally in the absence of rule, or where the consequences of rules are doubtful, established custom becomes law.

Art. 6. The principles and forms of nomenclature should be as similar as possible in botany and in zoology; but botanical nomenclature is entirely independent of zoological nomenclature.

Art. 7. Scientific names are in latin for all groups. When taken from another language, a latin termination is given them, except in cases sanctioned by custom. If translated into a modern language, it is desirable that they should preserve as great a resemblance as possible to the original latin names.

Art. 8. Nomenclature comprises two categories of names: 1. Names, or rather terms, which express the nature of the groups comprehended one within the other. 2. Names peculiar to each of the groups of plants that observation has made known.

Art. 9. The rules and recommendations of botanical nomenclature apply to all classes of the plant kingdom, reserving special arrangements for fossil plants and non-vascular plants.<sup>1</sup>

## Chapter II. On the manner of designating the nature and the subordination of the groups which constitute the plant kingdom.

Art. 10. Every individual plant belongs to a species (*species*), every species to a genus (*genus*), every genus to a family (*familia*) every family to an order (*ordo*), every order to a class (*classis*), every class to a division (*divisio*).

Art. 11. In many species we distinguish varieties (*varietas*) and forms (*forma*); and in some cultivated species, modifications still more numerous; in many genera sections (*sectio*), in many families tribes (*tribus*).

Art. 12. Finally if circumstances require us to distinguish a greater number of intermediate groups, it is easy, by putting the

<sup>1</sup> These special arrangements have been reserved for the Congress of 1910. They comprise: 1. rules bearing on special points in relation to the nature of fossils or the lower plants; 2. lists of *nomina conservanda* for all divisions of plants other than Phanerogams.



syllable *sub* before the name of a group, to form subdivisions of that group. In this way subfamily (*subfamilia*) designates a group between a family and a tribe, subtribe (*subtribus*) a group between a tribe and a genus, etc. The arrangement of subordinate groups may thus be carried, for wild plants only, to twenty-one degrees, in the following order: Regnum vegetabile. Divisio. Subdivisio. Classis. Subclassis. Ordo. Subordo. Familia. Subfamilia. Tribus. Subtribus. Genus. Subgenus. Sectio. Subsectio. Species. Subspecies. Varietas. Subvarietas. Forma. Individuum.

If this list of groups is insufficient it can be augmented by the intercalation of supplementary groups, so long as these do not introduce confusion or error.

Example: *Series* and *Subseries* are groups which can be intercalated between subsection and species.

Art. 13. The definition of each of these names of groups varies, up to a certain point, according to individual opinion and the state of the science, but their relative order, sanctioned by custom must not be altered. No classification is admissible which contains such alterations.

Examples of inadmissible alterations are,— a form divided into varieties, a species containing genera, a genus containing families or tribes.

Art. 14. The fertilization of one species by another, gives rise to a hybrid (*hybrida*); that of a modification or subdivision of a species by another modification of the same species gives rise to a half-breed (*mistus*, *mule* of florists).

### Recommendations.

I. The arrangement of species in a genus or in a subdivision of a genus is made by means of typographic signs, letters or numerals. Hybrids are arranged after one of the parent species, with the sign  $\times$  placed before the generic name.

The arrangement of subspecies under a species is made by letters or numerals; that of varieties by the series of greek letters  $\alpha$ ,  $\beta$ ,  $\gamma$ , etc. Groups below varieties and also half-breeds are indicated by letters, numerals or typographic signs at the author's will.

Modifications of cultivated plants should be associated, as far as possible, with the species from which they are derived.

## Chapter III. On the manner of designating each group or association of plants.

### Section 1. General principles; priority.

Art. 15. Each natural group of plants<sup>1</sup> can bear in science only

<sup>1</sup> See observation to article 9.

one valid designation, namely the oldest, provided that it is in conformity with the rules of Nomenclature and the conditions laid down in articles 19 and 20 of section 2.

Art. 16. The designation of a group by one or several names is not for the purpose of describing the characters or the history of the group, but that we may be understood when we wish to speak of it.

Art. 17. No one should change a name or a combination of names without serious motives, based on a more profound knowledge of facts, or on the necessity of giving up a nomenclature that is contrary to rules.

Art. 18. The form, number and arrangement of names depend on the nature of each group, according to the following rules.

Section 2. **Point of departure for nomenclature; limitation of principle of priority.**

Art. 19. Botanical nomenclature begins with the *Species Plantarum* of Linnaeus, ed. 1. (1753) for all groups of vascular plants. It is agreed to associate genera, the names of which appear in this work, with the descriptions given of them in the *Genera Plantarum* ed. 5. (1754).

Art. 20. However, to avoid disadvantageous changes in the nomenclature of genera by the strict application of the rules of Nomenclature, and especially of the principle of priority in starting from 1753, the rules provide a list of names which must be retained in all cases. These names are by preference those which have come into general use in the fifty years following their publication, or which have been used in monographs and important floristic (floristiques) works up to the year 1890. The list of these names forms an appendix to the rules of Nomenclature.

Section 3. **Nomenclature of the different kinds of groups.**

§ 1. *Names of groups above the family.*

**Recommendations.** The following suggestions as to the nomenclature of groups of higher rank than the family will tend to clearness and uniformity.

II. Names of divisions and subdivisions, of classes and subclasses are taken from one of their characters. They are expressed by words of greek or latin origin, some similarity of form and termination being given to those that designate groups of the same nature.

Examples: *Angiospermae*, *Gymnospermae*; *Monocotyledoneae*, *Dicotyledoneae*; *Pteridophyta*; *Coniferae*. Among Cryptogams old family names such as *Fungi*, *Lichenes*, *Algae*, may be used for names of groups above the rank of family.

**III.** Orders are designated preferably by the name of one of their principal families, with the ending *-ales*. Suborders are designated in a similar manner, with the ending *-ineae*. But other terminations may be retained for these names, provided that they do not lead to confusion or error.

Examples of names of orders: *Polygonales* (from *Polygonaceae*), *Urticales* (from *Urticaceae*), *Glumiflorae*, *Centrospermae*, *Parietales*, *Tubiflorae*, *Microspermae*, *Contortac*. Examples of names of suborders: *Bromeliineae* (from *Bromeliaceae*), *Malvineae* (from *Malvaceae*), *Tricoccae*, *Enantioblastae*.

§ 2. *Names of families and subfamilies, tribes and subtribes.*

Art. 21. Families (*familiae*) are designated by the name of one of their genera or ancient generic names with the ending *-aceae*.

Examples: *Rosaceae* (from *Rosa*), *Salicaceae* (from *Salix*), *Caryophyllaceae* (from *Dianthus Caryophyllus*), etc.

Art. 22. The following names, owing to long usage, are an exception to the rule: *Palmae*, *Gramineae*, *Cruciferae*, *Leguminosae*, *Guttiferae*, *Umbelliferae*, *Labiatae*, *Compositae*.

Art. 23. Names of subfamilies (*subfamiliae*) are taken from the name of one of the genera in the group, with the ending *-oideae*. The same holds for the tribes (*tribus*) with the ending *-eae*, and for the subtribes (*subtribus*) with the ending *-inae*.

Examples of subfamilies: *Asphodeloideae* (from *Asphodelus*), *Rumicoideae* (from *Rumex*); tribes: *Asclepiadeae* (from *Asclepias*), *Phyllanthae* (from *Phyllanthus*); subtribes: *Metastelmatinae* (from *Metastelma*), *Madiinae* (from *Madiā*).

§ 3. *Names of genera and divisions of genera.*

Art. 24. Genera receive names, substantives (or adjectives used as substantives) in the singular number and written with a capital letter, which may be compared with our own family names. These names may be taken from any source whatever and may even be composed in an absolutely arbitrary manner.

Examples: *Rosa*, *Convolvulus*, *Hedysarum*, *Bartramia*, *Liquidambar*, *Gloriosa*, *Impatiens*, *Manihot*.

Art. 25. Subgenera and sections also receive names, usually substantives and resembling the names of genera. Names of subsections and other lower subdivisions of genera are preferably adjectives in the plural number and written with a capital letter, or their place may be taken by an ordinal number or a letter.

Examples. — Substantives: *Fraxinaster*, *Trifoliastrum*, *Adenosquilla*, *Euhermannia*, *Archieracium*, *Micromelilotus*, *Pseudinga*, *Heterodraba*, *Gymnocimum*, *Neoplantago*, *Stachyotypus*. Adjectives: *Pleiostylae*, *Fimbriati*, *Bibracteolata*, *Pachycladae*.



### Recommendations.

IV. When the name of a genus, subgenus or section is taken from the name of a person, it is formed in the following manner:

a) When the name ends in a vowel, the letter *a* is added (for example *Glazioua* after Glaziou; *Bureaua* after Bureau), except when the name already ends in *a*, in which case *ea* is added (e. g. *Collaea* after Colla).

b) When the name ends in a consonant, the letters *ia* are added (thus *Magnusia* after Magnus; *Ramondia* after Ramond), except when the name ends in *er*, in which case *a* is added (e. g. *Kerneria* after Kerner).

c) The spelling of the syllables unaffected by these finals is retained, even with the consonants *k* and *w* or with groupings of vowels which were not used in classic latin. Letters which are unknown to botanical latin must be transcribed, diacritic signs are suppressed. The german ä, ö, ü become ae, oe, ue, the French é, è and ê become generally e.

d) Names may be accompanied by a prefix, or a suffix, or modified by anagram or abbreviation. In these cases they count as different words from the original name. E. g. *Durvillea* and *Urvillea*, *Lapeyrousea* and *Peyrousea*, *Englera*, *Englerastrum* and *Englerella*, *Bouchea* and *Übochea*, *Gerardia* and *Graderia*, *Martia* and *Martusia*.

V. Botanists who are publishing generic names show judgment and taste by attending to the following recommendations:

a) Not to make names very long or difficult to pronounce.

b) Not to use again a name which has already been used and has lapsed into synonymy (homonym).

c) Not to dedicate genera to persons who are in all respects strangers to botany, or at least to natural science, nor to persons quite unknown.

d) Not to take names from barbarous tongues, unless those names are frequently quoted in books of travel, and have an agreeable form that is readily adapted to the latin tongue and to the tongues of civilized countries.

e) To recall, if possible, by the formation or ending of the name, the affinities or the analogies of the genus.

f) To avoid adjectives used as nouns.

g) Not to give a genus a name whose form is rather that of a subgenus or section (e. g. *Eusideroxylon*, a name given to a genus of Lauraceae, which, however, being valid, cannot be changed).

h) Not to make names by the combination of two languages (*nomina hybrida*).

VI. Botanists constructing names for subgenera or sections, will do well to attend to the preceding recommendations and also to the following:

a) Give, where possible, to the principal division of a genus, a name which, by some modification or addition, calls the genus to mind (for instance, *Eu* placed at the beginning of the name, when it is of greek origin; *-astrum*, *-ella* at the end of the name, when latin, or any other modification consistent with the grammar and usages of the latin language).

b) Avoid calling a subgenus or a section by the name of the genus to which it belongs, with the final *-oides* or *-opsis*; on the contrary reserve this ending for a section which resembles another genus, by adding in that case *-oides* or *-opsis* to the name of that other genus, if it is of greek origin, to form the name of the section.

c) Avoid taking as the name of a subgenus or section a name which is already in use as such in another genus, or which is the name of an admitted genus.

VII. When it is required to express a subgeneric or sectional name together with the name of the genus and the name of the species, the name of the section is put between the others in a parenthesis. E. g. *Astragalus (Cycloglottis) contortuplicatus*.

#### § 4. *Names of species and of subdivisions of species.*

Art. 26. All species, even those that singly constitute a genus, are designated by the name of the genus to which they belong followed by a name (or epithet) termed specific, usually of the nature of an adjective (forming a combination of two names, a binomial, or binary name).

Examples: *Dianthus monspessulanus*, *Papaver Rhoeas*, *Fumaria Gussonei*, *Uromyces Fabae*, *Geranium Robertianum*, *Embelia Sarasinorum*, *Adiantum Capillus-Veneris*. Linnaeus has sometimes introduced symbols in specific names; these must according to art. 26 be transcribed. Ex.: *Scandix Pecten-Veneris* (= *Scandix Pecten* ♀); *Veronica Anagallis-aquatica* (= *Veronica Anagallis* ▽).

#### Recommendations.

**VIII.** The specific name should, in general, give some indication of the appearance, the characters, the origin, the history or the properties of the species. If taken from the name of a person, it usually recalls the name of the one who discovered or described it, or was in some way concerned with it.

**IX.** Names of men and women and also names of countries and localities used as specific names, may be substantives in the genitive (*Clusii*, *saharae*) or adjectives (*Clusianus*, *dahuricus*). It will be well, in the future, to avoid the use of the genitive and the adjectival form of the same name to designate two different species of the same genus [for example *Lysimachia Hemsleyana* Maxim. (1891) and *L. Hemsleyi* Franch. (1895)].

**X.** Specific names begin with a small letter except those which are taken from names of persons (substantives or adjectives) or those which are taken from generic names (substantives or adjectives).

Examples: *Ficus indica*, *Circaea lutetiana*, *Brassica Napus*, *Lythrum Hyssopifolia*, *Aster novibelgii*, *Malva Tournefortiana*, *Phyteuma Halleri*.

**XI.** When a specific name is taken from the name of a man, it is formed in the following way:

a) When the name ends in a vowel, the letter *i* is added (thus *Glazioui* from *Glaziou*; *Bureaui* from *Bureau*), except when the name ends in *a*, when *e* is added (thus *Balansae* from *Balansa*).

b) When the name ends in a consonant, the letters *ii* are added (thus *Magnusii* from *Magnus*; *Ramondii* from *Ramond*), except when the word ends in *er* when *i* is added (ex. *Kernerii*, from *Kerner*).

c) Syllables which are not modified by these endings retain their original spelling, even in the case of the consonants *k* and *w* or groupings of vowels which are not used in classic latin. Letters foreign to the latin of botanists should be transcribed, and diacritic signs suppressed. The german *ä*, *ö*, *ü*, become *ae*, *oe*, *ue*, the french *é*, *è*, and *ê* become, in general, *e*.

d) When specific names taken from the name of a person have an adjectival form a similar plan is adopted (*Geranium Robertianum*, *Carex Hallerana*, *Ranunculus Boreauanus*, etc.)

**XII.** The same applies to the names of women. These are written in the feminine when they have a substantial form.

Example: *Cypripedium Hookerae*, *Rosa Beatricis*, *Scabiosa Olgae*, *Omphalodes Luciliae*.

**XIII.** In the formation of specific names composed of two or several roots and taken from latin or greek, the vowel placed between the two roots

becomes a connecting vowel, in latin *i*, in greek *o*; thus we write *menthifolia*, *salviifolia*, not *menthaefolia*, *salviaefolia*. When the second root begins with a vowel and euphony demands, the connecting vowel is eliminated (e. g. *calliantha*, *lepidantha*). The connecting *ae* is legitimate only when etymology demands (e. g. *caricaeformis* from *Carica*, may be retained along with *cariciformis* from *Carex*).

**XIV.** In forming specific names, botanists will do well to note the following recommendations:

- a) Avoid very long names and those which are difficult to pronounce.
- b) Avoid names which express a character common to all or nearly all the species of a genus.
- c) Avoid names taken from little known or very restricted localities, unless the species be very local.
- d) Avoid, in the same genus, names which are very much alike, especially those which differ only in their last letters.
- e) Adopt unpublished names found in travellers' notes and herbaria, attributing them to the authors concerned, only when those concerned have approved the publication.
- f) Avoid names which have been used before in the genus, or in any closely allied genus, and which have lapsed into synonymy (homonyms).
- g) Do not name a species after a person who has neither discovered, nor described, nor figured, nor in any way studied it.
- h) Avoid specific names formed of two words.
- i) Avoid names which have the same meaning as the generic name.

Art. 27. Two species of the same genus cannot bear the same specific name, but the same specific name may be given in several genera.

Example: *Arabis spathulata* DC. and *Lepidium spathulatum* Phil. are valid as two names of Crucifers; but *Arabis spathulata* Nutt. in Torr. and Gray cannot be maintained, on account of the existence of *Arabis spathulata* DC., a name previously given to another valid species of *Arabis*.

Art. 28. Names of subspecies and varieties are formed like specific names and follow them in order, beginning with those of the highest rank. The same holds for subvarieties, forms, and slight or transient modifications of wild plants which receive a name or numbers or letters to facilitate their arrangement. Use of a binary nomenclature for subdivisions of species is not admissible.

Examples: *Andropogon ternatus* subsp. *macrothrix* (not *Andropogon macrothrix* or *Andropogon ternatus* subsp. *A. macrothrix*); *Herniaria hirsuta* var. *diandra* (not *Herniaria diandra* or *Herniaria hirsuta* var. *H. diandra*); forma *nanus*, forma *maculatum*.

#### Recommendation.

**XV.** Recommendations made for specific names apply equally to names of subdivisions of species. These agree with the generic name when they have an adjectival form (*Thymus Serpyllum* var. *angustifolius*, *Ranunculus acris* subsp. *Friesianus*).

Art. 29. Two subspecies of the same species cannot have the same name. A given name can only be used once for a variety of a given



species, even when dealing with varieties which are classed under different subspecies. The same holds for subvarieties and forms.

On the other hand the same name may be employed for subdivisions of different species, and the subdivisions of any one species may bear the same name as other species.

Examples. — The following are admissible: *Rosa Jundzillii* var. *leioclada* and *Rosa glutinosa* var. *leioclada*; *Viola tricolor* var. *hirta*, in spite of the existence already of a different species named *Viola hirta*. The following are incorrect: *Erysimum hieracifolium* subsp. *strictum* var. *longisiliquum* and *E. hieracifolium* subsp. *pannonicum* var. *longisiliquum* — a form of nomenclature which allows two varieties bearing the same name in the same species.

### Recommendation.

**XVI.** Botanists are recommended to use as little as possible the privilege granted in the second part of article 29, in order to avoid confusion and mistakes and also to reduce to a minimum the necessary changes of name when the subdivisions of species are raised to specific rank or vice versa.

Art. 30. Forms and half-breeds among cultivated plants should receive fancy names, in common language, as different as possible from the latin names of the species or varieties. When they can be traced back to a species, a subspecies or a botanical variety this is indicated by a succession of names.

Example: *Pelargonium zonale* Mrs. Pollock.

### § 5. Names of hybrids and half-breeds (mules).

Art. 31. Hybrids between species of the same genus, or presumably so, are designated by a formula and, whenever it seems useful or necessary, by a name.

The formula consists of the names or specific epithets of the two parents in alphabetical order and connected by the sign  $\times$ . When the hybrid is of known experimental origin the formula may be made more precise by the addition of the signs,  $\varnothing$   $\sigma$ .

The name, which is subject to the same rules as names of species, is distinguished from the latter by absence of an ordinal number and by the sign  $\times$  before the name.

Examples:  $\times$  *Salix caprea* = *Salix aurita*  $\times$  *caprea*; *Digitalis lutea*  $\varnothing$   $\times$  *purpurea*  $\sigma$ ; *Digitalis lutea*  $\sigma$   $\times$  *purpurea*  $\varnothing$ .

Art. 32. Intergeneric hybrids (between species of different genera) or presumably such, are also designated by a formula, and, when it seems useful or necessary, by a name.

The formula consists of the names of the two parents, in alphabetical order.

The hybrid is associated with the one of the two genera which precedes the other in alphabetical order. The name is preceded by the sign  $\times$ .

Examples:  $\searrow$  *Ammophila baltica* — *Ammophila arenaria*  $\searrow$  *Calamagrostis epigeios*.

Art. 33. Ternary hybrids, or those of a higher order, are designated like ordinary hybrids by a formula and a name.

Examples:  $\times$  *Salix Strachleri* = *S. aurita*  $\times$  *cinerea*  $\times$  *repens* or *S. (aurita*  $\times$  *repens)*  $\times$  *cinerea*.

Art. 34. When there is reason to distinguish the different forms of a hybrid (pleomorphic hybrids, combinations between different forms of collective species etc.) the subdivisions are classed under the hybrid like the subdivisions of species under a species.

Examples:  $\searrow$  *Mentha villosa*  $\beta$  *Lamarckii* (= *M. longifolia*  $\searrow$  *rotundifolia*). The preponderance of the characters of one or other parent may be indicated in the formulas in the following manner: *Mentha longifolia*  $\searrow$   $\searrow$  *rotundifolia*, *M. longifolia*  $\times$   $<$  *rotundifolia*, *Cirsium supercanum*  $\times$  *rivulare*, etc. etc. The participation of a particular variety may also be indicated. Example: *Salix caprea*  $\times$  *daphnoides* var. *pulchra*.

### Recommendation.

**XVII.** Half-breeds, or presumably such, may be designated by a name and a formula. Names of half-breeds are intercalated among the subdivisions of a species preceded by the sign  $\searrow$ . In the formula the names of the parents are in alphabetical order.

Section 4. The publication of names and the date of each name or combination of names.

Art. 35. Publication is effected by the sale or public distribution of printed matter or indelible autographs.

Communication of new names at a public meeting, or the placing of names in collections or gardens open to the public, do not constitute publication.

Examples. — Effective publication without printed matter: *Salvia oxyodon* Webb and Heldr. was published in July 1850 in an autograph catalogue and put on sale (Webb and Heldreich, *Catalogus plantarum hispanicarum, etc. ab A. Blanco lectarum*, Parisiis, Jul. 1850 in folio). — Non-effective publication at a public meeting: Cusson announced his establishment of the genus *Pipsosaxerman* in a memoir read at the Société des Sciences de Montpellier in 1773, and later in 1782 or 1783 at the Société de Médecine de Paris, but its effective publication dates from 1787, in the *Mémoires de la Soc. Roy. de Médecine de Paris*, vol. V, 1re partie.

Art. 36. On and after January 1, 1908, the publication of names of new groups will be valid only when they are accompanied by a latin diagnosis.

Art. 37. A species or a subdivision of a species, announced in a work, with a complete specific or varietal name, but without diagnosis or reference to a former description under another name, is not valid. Citation in synonymy or incidental mention of a name is not effective publication, and the same applies to the mention of name on a ticket issued with a dried plant without printed or autographed diagnosis;

Plates accompanied with analyses are equivalent to a description. but this applies only to plates published before January 1, 1908.

Examples.— The following are valid publications: *Onobrychis eubrychidea* Boiss. *Fl. or.* II, 546 (1872) published with description; *Panax nossibienensis* Drake in Grandidier *Hist. Phys. Nat. et Polit. de Madagascar*, Vol. XXXV, t. V, III, 5e part., Pl. 406 (1896), published in the form of a plate with analyses; *Cynanchum nivale* Nym. *Syll. fl. Eur.* 108 (1854–1855) published with a reference to *Vincetoxicum nivale* Boiss. et Heldr. previously described. *Hieracium Flahaultianum* Arv.-Touv. et Gaut., published in an exsiccata accompanied by a printed diagnosis (*Hieraciotheca gallica*, nos. 935–942, 1903).— The following are not valid: *Sciadophyllum heterotrichum* Decaisne et Planch. in *Rev. Hort.*, ser. IV, III, 107 (1854), published without description or reference to a previous description under another name; *Ornithogalum undulatum* Hort. Berol. ex Kunth *Enum. pl.* IV, 348 (1843), quoted as a synonym of *Myogalum Boucheanum* Kunth l. c., the name adopted by the author, is not a valid publication; when transferred to *Ornithogalum*, this species must be called *Ornithogalum Boucheanum* Aschers. in *Osterr. Bot. Zeitschr.* XVI, 192 (1866); *Erythrina micropteryx* Poepp. quoted as a synonym of *Micropteryx Poeppigiana* Walp. in *Linnaea* XXIII, 740 (1850) is not a valid publication; the species in question, when placed in the genus *Erythrina* must be called *Erythrina Poeppigiana* O. F. Cook in *U. S. Dep. Agr. Bull.* no. 25, p. 57 (1901); *Nepeta Sieheana* Hausskn. which appears without diagnosis in an exsiccata (W. Siehe, Bot. Reise nach Sicilien, no. 521, 1896), is not valid.

Art. 38. A genus or any other group of higher rank than a species, named or announced without being characterised conformably to article 37 cannot be regarded as effectively published (*nomen nudum*). The mere indication of species as belonging to a new genus or of genera as belonging to a higher group, does not allow us to accept the genus or group in question as characterised and effectively published. An exception is made in the case of the generic names mentioned by Linnaeus in the *Species Plantarum* ed. 1., 1753, names which we associate with the descriptions in the *Genera Plantarum* ed. 5., 1754 (See article 19).

Examples.— The following are valid publications: *Carphalea* Juss. *Gen. Pl.* 198 (1789), published with a description; *Thuspeinanta* Dur. *Ind. Gen. Phaner.*, p. X (1888), published with a reference to the genus *Tapeinanthus*



Boiss. previously described; *Stipa* L. *Sp. Pl.* ed. 1, 78 (1753), valid because accompanied by a description in the *Genera Plantarum* ed. 5, no. 84 (1754).—The following are not valid: *Egeria* Neraud (*Bot. Voy. Freycinet*, p. 28 (1826), published without diagnosis or reference to a description previously made under another name; *Acosmos* Desv. mentioned incidentally as a synonym of the genus *Aspicarpa* Rich. by De Candolle (*Prodr.* 1, 583 [1824]); *Zatarhendi* Forsk. *Fl. Aeg. Arab.*, p. CXV (1775), based only on the enumeration of 3 species of the genus *Ocimum* without indication of characters.

Art. 39. The date of a name or of a combination of names is that of their effective publication. In the absence of proof to the contrary, the date placed on the work containing the name or combination of names is regarded as correct. On and after January 1st, 1908, the date of publication of the latin diagnosis only can be taken into account in questions of priority.

Examples. — *Mentha jolivicoma* Opiz was distributed by its author in 1832, but the name dates from 1882 (published by Déséglise *Menth. Op.* in *Bull. soc. étud. scient. Angers*, 1881–1882, p. 210); *Mentha bracteolata* Op. *Seznam*, p. 65 (1852) without description, takes effect only from 1882, when it was published with a description (Déséglise l. c., p. 211). There is some reason for supposing that the first volume of Adanson's *Familles des Plantes* was published in 1762, but in absence of certainty the date 1763 on the title-page is assumed to be correct. The different parts of Willdenow's *Species Plantarum* were published as follows: vol. I, 1798; vol. II, 2, 1800; vol. III, 1, 1801; vol. III, 2, 1803; vol. III, 3, 1804; vol. IV, 2, 1806; and not in the years 1797, 1799, 1800, 1800, 1800 and 1805 respectively, as would appear from the title-page of the volumes: it is the earlier series of dates which takes effect. — The third volume of the *Prodromus florae hispanicae* of Willkomm & Lange, the title-page of which bears the date 1880, was published in four parts, pp. 1–240 in 1874, pp. 241–512 in 1877, pp. 513–736 in 1878, p. 737 to the end in 1880, and it is these dates which take effect.

**Recommendations.** Botanists will do well, in publishing, to conform to the following recommendations:

**XVIII.** Not to publish a name without clearly indicating whether it is the name of a family or a tribe, a genus or a section, a species or a variety; briefly, without expressing an opinion on the nature of the group to which they give the name.

**XIX.** To avoid publishing or mentioning in their publications unpublished names which they do not accept, especially if the persons responsible for these names have not formally authorised their publication (see Rec. XIV, e).

**XX.** When publishing new names in works written in a modern language (floras, catalogues etc.) to publish simultaneously the latin diagnoses which will make the names valid from the point of view of scientific nomenclature.

**XXI.** To give the etymology of new generic names and also of specific names when the meaning of the latter is not obvious.

**XXII.** To indicate precisely the date of publication of their works and that of the placing on sale or the distribution of named and numbered plants when these are accompanied by printed diagnoses. In the case of a work appearing in parts, the last published sheet of a volume should indicate the precise dates at which the different fascicles or parts of the volume were published, as well as the number of pages in each.

**XXIII.** When works are published in periodicals to require the editor to indicate on the separate copies the date (year and month) of publication and also the title of the periodical from which the work is extracted.

**XXIV.** Separate copies should always bear the pagination of the periodical of which they form a part; if desired they may also bear a special pagination.

Section 5. **On the precision to be given to names by the citation of the author who first published them.**

Art. 40. For the indication of the name or names of a group to be accurate and complete, and in order that the date may be readily verified, it is necessary to quote the author who first published the name or combination of names in question.

Examples: *Simarubaceae* Lindley, *Simaruba* Aublet, *Simaruba laevis* Grisebach, *Simaruba amara* Aublet var. *opaca* Engler.

Art. 41. An alteration of the constituent characters or of the circumscription of a group does not warrant the quotation of another author than the one who first published the name or combination of names.

When the changes have been considerable, the words: *mutatis charact.*, or *pro parte*, or *excl. gen.*, *excl. sp.*, *excl. var.*, or some other abridged indication, are added after the citation of the original author, according to the nature of the changes that have been made, and of the group in question.

Examples: *Phyllanthus* L. em. (emendavit) Müll. Arg.; *Myosotis* L. pro parte, R. Br.; *Globularia cordifolia* L. excl. var.  $\beta$ .; etc.

Art. 42. When a manuscript name has been published and referred to its author, the name of the person who published it should be appended to the citation. The same rule should be followed for names of garden origin when they are cited as "Hort."

Examples: *Capparis lasiantha* R. Br. ex or apud DC.; *Streptanthus heterophyllus* Nutt. in Torr. et Gray; *Gesnera Donkharrii* Hort. ex or apud Hook. Bot. Mag. tab. 5070.

Art. 43. When, in a genus, a name is applied to a group which is moved into another group where it retains the same rank, or to a group which becomes of higher or lower rank than before, the change is equivalent to the creation of a new group and the author who has effected the change is the one to be quoted. The original author can be cited only in parenthesis.

Examples. — *Chieranthus tristis* L. when moved into the genus *Matthiola* becomes *Matthiola tristis* R. Br., or *Matthiola tristis* (L.) R. Br. — *Medicago polymorpha* L. var. *orbicularis* L. when raised to the rank of a species becomes *Medicago orbicularis* All. or *Medicago orbicularis* (L.) All.

**Recommendations.**

**XXV.** Authors' names put after names of plants are abbreviated, unless they are very short.

For this purpose preliminary particles or letters that do not, strictly speaking, form part of the name, are suppressed, and the first letters are given without any omission. If a name of one syllable is long enough to make it worth while to abridge it, the first consonants only are given (Br. for Brown); if the name has two or more syllables, the first syllable and the first letter of the following one are taken, or the two first when both are consonants (Juss. for Jussieu; Rich. for Richard). When it is necessary to give more of a name to avoid confusion between names beginning with the same syllables, the same system is to be followed. For instance two syllables are given together with the one or two first consonants of the third; or one of the last characteristic consonants of the name is added (Bertol. for Bertoloni, to distinguish from Bertero; Michx for Michaux, to distinguish from Micheli). Christian names or accessory designations, serving to distinguish two botanists of the same name, are abridged in the same way (Adr. Juss. for Adrien de Jussieu, Gaertn. fil. or Gaertn. f. for Gaertner filius).

When it is a well established custom to abridge a name in another manner, it is best to conform to it (L. for Linnaeus, DC. for De Candolle, St.-Hil. for Saint-Hilaire).

In publications destined for the general public and in titles it is preferable not to abridge.

**Section 6. On names that are to be retained when a group is divided, remodelled, transferred, or moved from one rank to another, or when two groups of the same rank are united.**

Art. 44. A change of characters, or a revision which involves the exclusion of certain elements of a group or the addition of new elements, does not warrant a change in the name or names of a group, except in cases provided for in article 51.

Examples.—The genus *Myosotis* as revised by R. Brown differs from the original genus of Linnaeus, but the name has not been changed, nor is any change allowable. Various authors have united with *Centaurea Jacea* L. one or two species which Linnaeus had kept distinct; the group thus constituted must be called *Centaurea Jacea* L. (sensu ampl.) or *Centaurea Jacea* L. (em. Visiani, em. Godron, etc.); the creation of a new name such as *Centaurea vulgaris* Godr. is superfluous.

Art. 45. When a genus is divided into two or more genera, the name must be kept and given to one of the principal divisions. If the genus contains a section or some other division which, judging by its name or its species, is the type or the origin of the group, the name is reserved for that part of it. If there is no such section or subdivision, but one of the parts detached contains a great many more species than the others, the name is reserved for that part of it.

Examples.—The genus *Helianthemum* contained, according to Dunal (in DC. *Prodr.* I. 266-284 [1824]), 112 well-known species distributed in nine sections; several of these sections have since been raised to generic rank (*Fumana* Spach, *Tuberaria* Spach) but the name *Helianthemum* has been kept for the divisions grouped round the section *Euhelianthemum*.—The genus *Convolvulus* L. em. Jacq. was divided into two by Robert Brown in 1810 (*Prodr. fl. Nov. Holl.*, p. 482-484), who gave the name *Calystegia* to one



of the genera which at that time contained only four species, and reserved the name *Convolvulus* for the other genus which contained a much larger number of species. — In the same way Salisbury (in *Trans. Linn. Soc.* VI, 317 [1802]), in separating *Erica vulgaris* L. from the genus *Erica*, under the name *Calluna*, kept the name *Erica* for the large number of species left.

Art. 46. When two or more groups of the same nature are united, the name of the oldest is retained. If the names are of the same date, the author chooses, and his choice cannot be modified by subsequent authors.

Examples. — Hooker f. and Thomson (*Fl. Ind.* p. 67 [1855]) united the genera *Wormia* Rottb. and *Capellia* Bl.; they gave the name *Wormia* to the genus thus formed because the last name dates from 1783 while *Capellia* dates from 1825. — In case of union of the two genera *Cardamine* and *Dentaria*, which were founded at the same time by Linnaeus (*Sp. Pl.* ed. 1, p. 653 and 654 [1753]; *Gen. Pl.* ed. 5, n. 726, 727) the collective genus must be called *Cardamine* because that name was chosen by Crantz (*Class. Crucif.*, p. 126 [1769]), who was the first to suggest the union.

#### Recommendations.

**XXVI.** Authors who have to choose between two generic names should note the following recommendations:

1. Of two names of the same date to prefer the one which was first accompanied by the description of a species.

2. Of two names of the same date, both accompanied by descriptions of species, to prefer the one, which, when the author made his choice, included the larger number of species.

3. In cases of equality from these various points of view to prefer the more correct and appropriate name.

**XXVII.** When several genera are united as subgenera or sections under one generic name, that subdivision which was first distinguished or described may retain its name (ex.: *Anarrhinum* sect. *Anarrhinum*; *Hemigenia* sect. *Hemigenia*), or be preceded by a prefix (*Anthriscus* sect. *Eu-Anthriscus*) or followed by a suffix (*Stachys* sect. *Stachyotypus*). These prefixes or suffixes lapse when the subdivisions are raised to generic rank.

**XXVIII.** When several species are united as subspecies or varieties under a collective name, that subdivision which was first distinguished or described may retain its name (ex.: *Saxifraga aspera* subsp. *aspera*) or bear a prefix (*Alchemilla alpina* subsp. *eualpina*) or be designated by some customary title (*normalis*, *genuinus*, *typicus*, *originarius*, *verus*, *veridicus* etc.). These prefixes or terms lapse when the subdivisions are raised to specific rank.

Art. 47. When a species or subdivision of a species is divided into two or more groups of the same nature, if one of the two forms was distinguished or described earlier than the other, the name is retained for that form.

Examples. — *Genista horrida* DC. *Fl. Franc.* IV. 500 was divided by Spach (in *Ann. Sci. Nat.* ser. 3, II., 253 [1844]) into three species: *G. horrida* DC., *G. Boissieri* Spach and *G. Webbii* Spach; the name *G. horrida* was rightly kept for the earliest described form, that described and figured by Vahl. and Gilibert. — Several species (*Primula cashmiriana* Munro, *P. erosa* Wall.) have been separated from *Primula denticulata* Sm. (*Exot. Bot.* II, 109, tab. 114), but the name *P. denticulata* has been rightly kept for the form which Smith described and figured under this name.

Art. 48. When a subgenus or section or species is moved into another genus, when a variety or other division of a species is moved into another species, retaining there the same rank, the original name of the subgenus or section, the first specific epithet, or the original name of the division of the species must be retained or must be re-established, unless, in the new position there exists one of the obstacles indicated in the articles of section 7.

Examples. — The subgenus *Alfredia* Less. (*Syn.* p. 6, 1832) of the genus *Rhaponticum* keeps its name when placed in the genus *Carduus*: *Carduus* sect. *Alfredia* Benth. et Hook. fil.; the section *Vaccaria* DC. of the genus *Saponaria* keeps its name when placed in the genus *Gypsophila*: *Gypsophila* sect. *Vaccaria* Gren. et Godr. — *Lotus siliquosus* L. *Syst.* ed. 10, p. 1178 (1759) when transferred to the genus *Tetragonolobus* must be called *Tetragonolobus siliquosus* Roth *Tent. Fl. germ.* I. 323 (1788) and not *Tetragonolobus Scandalida* Scop. *Fl. Carn.* ed. 2, II, 87 (1772). — *Betula incana* L. *Suppl.* p. 417 (1781) when transferred to the genus *Alnus* must be called *Alnus incana* Willd. *Sp. Pl.* IV, 335 (1805), not *Alnus lanuginosa* Gilib. *Exerc. Phytol.* II, 402 (1792). — *Satyrium nigrum* L. *Sp. Pl.* ed. 1, 944 (1753), when placed in the genus *Nigritella* must be called *Nigritella nigra* Reichb. f.  *Ic. Fl. Germ. et Helv.* XIV, 102 (1851), not *Nigritella angustifolia* Rich. in *Mém. Mus. Par.* IV, 56 (1818). The variety  $\gamma$  *micranthum* Gren. et Godr. (*Fl. France*, I, 171 [1847]) of *Helianthemum italicum* Pers., when transferred as a variety to *H. penicillatum* Thib. retains its name: *H. penicillatum* var.  $\alpha$  *micranthum* Grosser (in *Engl. Pflanzenreich.* Heft. 14, p. 115 [1903]). — The variety *subcarnosa* Hook. fil. (*Bot. Antarct. Voy.* I, 5 [1847]) of *Cardamine hirsuta* L., when transferred as a variety to *C. glacialis* DC., retains its name: *C. glacialis* var. *subcarnosa* O. E. Schulz (in *Engl. Bot. Jahrb.* XXXII, 542 [1903]); the citation of an earlier synonym (*Cardamine propinqua* Carmichael in *Trans. Linn. Soc.* XII, 507 [1818]) has no influence on the choice of the name of the variety (see art. 49). In all these cases, older but incorrect combinations must give place to more recent combinations in which the rule has been observed.

Art. 49. When a tribe becomes a family, a subgenus or a section becomes a genus, a subdivision of a species becomes a species, or the reverse of these changes takes place, and speaking generally when a group changes its rank, the earliest name (or combination of names) received by the group in its new position must be regarded as valid, if it is in conformity with the rules, unless there exist any of the obstacles indicated in the articles of section 7.

Examples. — The section *Campanopsis* R. Br. *Prodr. Fl. Nov. Holl.*, p. 561 (1810) of the genus *Campanula*, was first raised to generic rank by Schrader, and must be called *Wahlenbergia* Schrad. *Cat. hort. Goett.* (1814), not *Campanopsis* O. Kuntze *Rev. Gen.* II, p. 378 (1891). — *Magnolia virginiana* L. var. *foetida* L. *Sp. pl.* ed. 1, p. 536 (1753), raised to specific rank, must be called *Magnolia grandiflora* L. *Syst. Nat.* ed. 10, p. 1082 (1759) not *Magnolia foetida* Sarg. in *Gard. and For.* II, 615 (1889). — *Mentha spicata* L. var. *viridis* L. *Sp. Pl.*, ed. 1, p. 576 (1753) was raised to the rank of a species by Hudson, and must be called *Mentha spicata* Huds. *Fl. angl.* ed. 1, p. 221 (1762) not *Mentha viridis* L. *Sp. Pl.*, ed. 2, p. 804 (1763). — *Lythrum inter-*

*medium* Ledeb. (*Ind. Hort. Dorp.* [1822]), regarded as a variety of *L. Salicaria* L., must be called *L. Salicaria* var. *gracilius* Turcz. (in *Bull. Soc. Nat. Moscou*, XVII, 235 [1844]), not *L. Salicaria* var. *intermedium* Koehne (in *Engl. Bot. Jahrb.* I, 327 [1881]). In all these cases names which are in accordance with the old law of Alphonse de Candolle must give place to older names and combinations.

**Recommendations.** Authors who make the changes discussed in article 49 should note the following recommendations in order to avoid a change of name in case of a change of rank.

**XXIX.** 1<sup>o</sup>. When a sub-tribe becomes a tribe, when a tribe becomes a subfamily, when a subfamily becomes a family, etc., or when the inverse changes occur, do not alter the root of a name but only the termination (*-inae*, *-eae*, *-oideae*, *-aceae*, *-inae*, *-ales*, etc.), unless, in the new position one of the obstacles indicated in the articles of section 7, supervenes, or the new designation becomes a source of error, or there is some other serious reason against it.

2<sup>o</sup>. When a section or a subgenus becomes a genus, or the inverse changes take place, retain the old names, unless this results in two genera of plants having the same name, or the existence of two subdivisions of the same name in the same genus, or one of the obstacles indicated in the articles of section 7 supervenes.

3<sup>o</sup>. When a subdivision of a species becomes a species or the inverse change occurs, retain the original epithets, unless this results in two species bearing the same name in the same genus, or two subdivisions bearing the same name in the same species, or unless any of the obstacles indicated in section 7 supervenes.

#### Section 7. On names that are to be rejected, changed or modified.

Art. 50. No one is authorised to reject, change or modify a name (or combination of names) because it is badly chosen, or disagreeable, or another is preferable or better known, or because of the existence of an earlier homonym which is universally regarded as non-valid, or for any other motive either contestable or of little import. (See also art. 57.)

Examples. — This rule was broken by the change of *Staphylea* to *Staphylis*, *Tamus* to *Thamnos*, *Mentha* to *Minthe*, *Tillaea* to *Tillia*, *Vincetoxicum* to *Alexitoxicum*; and by the change of *Orobancha Rapum* to *O. sarothamnophyta*, *O. Columbariae* to *O. columbarihaerens*, *O. Artemisiae* to *O. artemisiopiphyta*. All these modifications (which are contrary to Art. 50) must be rejected. — The name *Diplomorpha* Meissn. in *Regensb. Denkschr.* III, 289 (1841) must not be substituted for the generic name *Wickstroemia* Endl. *Prodr. fl. Norfolk.*, p. 47 (1833) because of the earlier homonyms *Wi(c)kstroemia* Schrad. *Goett. gel. Anz.*, p. 710 (1821) and *Wi(c)kstroemia* Spreng. in *Vet. Akad. Handl. Stockh.* 1821, p. 167, t. 3, for the former is merely a synonym of the genus *Laplacea* Kunth (1821) and the latter of a subdivision of the genus *Eupatorium* L. (1753).

**Recommendations.** See on the subject of homonyms recommendations Vb and XIVf which suggest that cases of this kind should be avoided for the future.

Art. 51. Every one should refuse to admit a name in the following cases:

1. When the name is applied in the plant kingdom to a group which has an earlier valid name.



2. When it duplicates the name of a class, order, family or genus, or a subdivision or species of the same genus, or a subdivision of the same species.

3. When it is based on a monstrosity.

4. When the group which it designates embraces elements altogether incoherent, or when it becomes a permanent source of confusion or error.

5. When it is contrary to the rules of sections 4 and 6.

Examples. — 1<sup>o</sup>. *Carelia* Adans. (1763) is a name which was applied by its author to a genus which had already received a valid name (*Ageratum* L. [1753]) (synonym); similarly *Trichilia alata* N. E. Brown (in *Kew Bull.* [1896] p. 160) is a name which cannot be maintained because it is a synonym of *T. pterophylla* C. DC. (in *Bull. Herb. Boiss.* II, 581 [1894]). — 2<sup>o</sup>. *Tapeinanthus*, a name given by Boissier to a genus of Labiatae was replaced by *Thuspeinanta* by Th. Durand, because of the existence of an earlier and valid genus, *Tapeinanthus* Herb. among the Amaryllidaceae (homonym). Similarly *Astragalus rhizanthus* Boiss. (*Diagn. Pl. Or.* ser. 1, II, 83 [1843]) was renamed *A. cariensis* Boiss. because of the existence of an earlier valid homonym. *Astragalus rhizanthus* Royle *Illustr. Bot. Himal.* p. 200 (1835). — 3<sup>o</sup>. The genus *Uropedium* Lindl. was based on a monstrosity which is now referred to *Phragmopedilum caudatum* Rolfe. — 5<sup>o</sup>. The genus *Schrebera* L. derives its characters from the two genera *Cuscuta* and *Myrica* (parasite and host) and must be dropped; and the same applies to *Lemnairea* De Vr. which is made up of elements taken from different families. Linnaeus described under the name of *Rosa villosa* a plant which has been referred to several different species and of which certain identification seems impossible; to avoid the confusion which results from the use of the name *Rosa villosa*, it is preferable in this case, as in other analogous cases, to abandon the name altogether.

Art. 52. The name of an order, suborder, family or subfamily, tribe or subtribe, must be changed when it is taken from a genus which, by general consent, does not belong to the group in question.

Examples. — If it were to be shown that the genus *Portulaca* does not belong to the family *Portulacaceae*, the name *Portulacaceae* would have to be changed. — Nees (in Hooker and Arnott, *Bot. Beechey's Voy.* p. 237 [1836]) gave the name *Tristegineae* to a tribe of Gramineae, after the genus *Tristegis* Nees (a synonym of the genus *Melinis* Beauv.). But *Melinis* (*Tristegis*) having been excluded from this tribe by Stapf (in *Fl. Cap.* VII. 313) and by Hackel (in *Oesterr. bot. Zeitschr.* LI, 464), these authors have adopted the name *Arundinelleae* from the genus *Arundinella*.

Art. 53. When a subgenus, a section or a subsection, passes as such into another genus, the name must be changed if there is already, in that genus, a valid group of the same rank, under the same name.

When a species is moved from one genus into another, its specific epithet must be changed if it is already borne by a valid species of that genus. Similarly when a subspecies, a variety, or some other subdivision of a species is placed under another species, its name

must be changed if borne already by a valid form of like rank in that species.

Examples.—*Spartium biflorum* Desf. (1798–1800) when transferred by Spach in 1849 into the genus *Cytisus* could not be called *Cytisus biflorus*, but was renamed *Cytisus Fontanesii*, because of the previous existence of a valid species *Cytisus biflorus* L'Hérit. (1789). The earliest synonym of *Calochortus Nuttallii* Torr. et Gray (in *Pacific Rail. Rep.* II, 124 [1855–1856]) is *Fritillaria alba* Nutt. (*Gen. Amer.* I, 222 [1818]) but we cannot restore the original epithet of this species, although this has been done in the *Notizbl. des K. bot. Gartens und Mus. Berl.* II, 318 (1899), because there exists already a valid species in the genus with the name *Calochortus albus* Dougl. in Maund *Botanist* t. 98 (1839).

Art. 54. Names of genera must be rejected in the following special cases:

1. When they are formed from a technical term borrowed from morphology, unless they are accompanied by specific names.
2. When they express uninominal nomenclature.
3. When they are formed of two words, unless these two words were from the first united or joined by a hyphen

Examples.—1°. Generic names such as *Lignum*, *Radix*, *Spina*, etc. would not now be admissible; on the other hand a generic name like *Tuber* should not be rejected when it has been published with specific names (*Tuber cibarium* etc.).—2°. Ehrhart (*Phytophylacium* [1780] and *Beiträg.* IV, 145–150) made use of a uninominal nomenclature for species known at that time under binary names (*Phaeocephalum*, *Leptostachys*, etc.). These names, which resemble generic names, must not be confused with such and are to be rejected, unless a subsequent author has given them the value of a generic name: for example *Baeothryon*, a uninominal expression of Ehrhart's, has been applied to a genus characterised by A. Dietrich *Spec. Pl.* II, 89 (1833).—3°. Names like *Quisqualis* (a single word from the first), *Sebastiano-Schaueria* and *Neves-Armondia* will stand.

Art. 55. Specific names must also be rejected in the following special cases:

- 1°. When they are ordinals serving for purpose of enumeration.
- 2°. When they merely repeat the generic name.

Examples.—1°. *Boletus vicesimus sextus*, *Agaricus octogesimus nonus*.—2°. *Linaria Linaria*, *Raphanistrum Raphanistrum* etc.

Art. 56. In the cases foreseen in articles 51 to 55, the name to be rejected or changed is replaced by the oldest valid name in the group in question, and in default of such a one a new name must be made.

Examples: See the examples cited under articles 51 and 53.

Art. 57. The original spelling of a name must be retained, except in case of a typographic or orthographic error. When the difference

between two names, especially two generic names, lies in the termination, these names are to be regarded as distinct even though differing by one letter only.

Examples: *Rubia* and *Rubus*, *Monochaete* and *Monochaetum*, *Peponia* and *Peponium*, *Iria* and *Iris*.

### Recommendations.

**XXX.** The liberty of making orthographic corrections must be used with reserve, especially if the change effects the first syllable, and above all the first letter of a name.

**XXXI.** Many names differ by a single letter without risk of confusion (ex. *Durvillea* and *Urvillea*). In cases where a close approach to identity is a source of error (ex. *Astrostemma* and *Asterostemma* in one and the same family, *Asclepiadaceae*, *Pleuripetalum* and *Pleuropetalum* in *Orchidaceae*) only one, the older, of the names should be kept, in accordance with article 51, 4°.

## Chapter IV. Modifications of the rules of botanical nomenclature.

Art. 58. The rules of botanical nomenclature can only be modified by competent persons at an international Congress convened for the express purpose.

### Appendix. Various Recommendations.

**XXXII.** Botanists should use in modern languages latin scientific names or those immediately derived from them, preferably to names of another kind or origin. They should avoid the use of the latter unless these are very clear and in common use.

**XXXIII.** Every friend of Science should oppose the introduction into a modern language of names of plants which are not already there, unless they are derived from latin botanical names by means of some slight alteration.

**XXXIV.** The metric system only is used in botany for reckoning weights and measures. The foot, inch, line, pound, ounce etc. should be rigorously excluded from scientific language.

Altitude, depth, rapidity etc. are measured in metres. Fathoms, knots, miles etc. are expressions which should disappear from scientific language.

**XXXV.** Very minute dimensions are reckoned in  $\mu$  (micromillimetres, microns, or thousandths of a millimetre) and not in fractions of a millimetre or line, etc.; fractions encumbered with ciphers and commas are more likely to give rise to mistakes.

**XXXVI.** Authors are asked to indicate clearly and precisely the scale of the figures which they publish.

**XXXVII.** Temperatures are expressed in degrees of the centigrade thermometer of Celsius.



NEW ENGLAND GENERA OF WHICH THE LONG ESTABLISHED NAMES  
ARE TO BE MAINTAINED NOTWITHSTANDING TECHNICAL LACK  
OF PRIORITY.

(Extracted from a list of about 400 such generic names sanctioned by act of the International Botanical Congress at Vienna.)

Names to be retained	Names to be discarded.
Tragus [Hall. (1768)] Scop. (1777)	Nazia Adans. (1763)
Leersia Sw. (1788)	Homalocenchrus Mieg (1760)
Hierochloe [J. G. Gmel. (1747)] R. Br. (1810)	Savastana Schrank (1789)
	Torresia Ruiz & Pav. (1794)
	Dissarrenum Labill. (1806)
Cynodon L. C. Rich. (1805)	Capriola Adans. (1763)
	Dactilon Vill. (1789)
	Fibichia Koel. (1802)
Ctenium Panz. (1814)	Campulosus Desv. (1810)
Glyceria R. Br. (1810)	Panicularia Fabr. (1763)
Fimbristylis Vahl (1806)	Iria L. C. Rich. (1805)
	Iriha O. Ktze. (1891)
Rhynchospora Vahl (1806)	Triodon L. C. Rich. (1805)
Symplocarpus Salisb. (1818)	Spathyema Raf. (1808)
Heteranthera Ruiz & Pav. (1794)	Phrynium Loeffl. (1758)
Luzula DC. (1805)	Juncoides [Moehr. ex] Adans. (1763)
Smilacina Desf. (1807)	Vagnera Adans. (1763)
	Tovaria Neck. (1790)
	Polygonastrum Moench (1794)
Majanthemum Web. (1780)	Unifolium [Moehr. (1736)] Adans. (1763)
	Valentinia Heist. (1763)
Lachnanthes Ell. (1816)	Heritiera J. F Gmel. (1791)
	Gyrotheca Salisb. (1812)
Belamcanda Adans. (1763)	Gemmingia Heist. (1763)
Platanthera L. C. Rich. (1818)	Lysias Salisb. (1812)
Spiranthes L. C. Rich. (1818)	Gyrostachis Pers. (1807)
	Ibidium Salisb. (1812)
Listera R. Br. (1813)	Diphryllum Raf. (1808)
Calopogon R. Br. (1813)	Cathea Salisb. (1812)
Liparis L. C. Rich.	Leptorkis Thou. (1809)
Carya Nutt. (1818)	Scoria Raf. (1808)
	Hicorius Raf. (1817)
	Hicoria Raf. (1838)

- Maclura* Nutt. *Toxylon* Raf. (1817)  
*Laportea* Gaudich. (1826) *Joxylon* Raf. (1818)  
*Pilea* Lindl. (1821) *Urticastrum* Fabric. (1759)  
*Arceuthobium* Marsch.-Bieb. (1819) *Adicea* Raf. (1815)  
*Fagopyrum* [Tourn. ex] Moench *Razoumowskia* Hoffm. (1808)  
(1794) *Helxine* L. (1753)  
*Suaeda* Forsk. (1775) *Dondia* Adans. (1763)  
*Spergularia* J. & C. Presl. (1819) *Lerchea* [Hall. (1743)] Rueling (1774)  
*Buda* Adans. (1763)  
*Dicentra* Bernh. (1833) *Tissa* Adans. (1763)  
*Capnorchis* Borekh. (1797)  
*Bikukulla* Adans. (1763)  
*Diclytra* Borekh. (1797)  
*Die'ytra* Cham. & Schlechtd. (1826)  
*Dactylicapnos* Wall. (1826)  
*Corydalis* Medik. (1803) *Capnoides* Adans. (1763)  
*Cisticapnos* Adans. (1763)  
*Neckeria* Scop. (1777)  
*Pseudofumaria* Medik. (1789)  
*Capsella* Medik. (1792) *Bursa* Siegesb. Weber (1780)  
*Marsypocarpus* Neck. (1790)  
*Erophila* DC. (1821) *Gansblum* Adans. (1763)  
*Physocarpus* Maxim. (1879) *Opulaster* Medik. (1799)  
*Sorbaria* A. Br. (1864) *Basilima* Raf. (1836)  
*Schizonotus* Lindl. (1829)  
*Tetragonolobus* Scop. (1772) *Scandalida* Adans. (1763)  
*Tephrosia* Pers. (1807) *Cracca* L. (1747, 1753)  
*Colinil* Adans. (1763)  
*Needhamia* Scop. (1777)  
*Oxytropis* DC. (1802) *Spiesia* Neck. (1790)  
*Desmodium* Desv. (1813) *Meibomia* Adans. (1763)  
*Pleurolobus* J. St. Hil. (1812)  
*Amphicarpaea* Ell. (1818) *Falcata* J. F. Gmel. (1791)  
*Savia* Raf. (1808)  
*Ailanthus* Desf. (1789) *Pongelion* Adans. (1763)  
*Nemopanthus* Raf. (1819) *Ilicioides* Dumont de Courset. (1802)  
*Shepherdia* Nutt. (1818) *Lepargyrea* Raf. (1818)  
*Bifora* Hoffm. (1816) *Anidrum* Neck. (1790)  
*Cryptotaenia* DC. (1829) *Deringa* Adans. (1763)  
*Alacospermum* Neck. (1790)  
*Loiseleuria* Desv. (1840) *Chamaecistus* Oeder. (1761)  
*Gaylussacia* HBK. (1818) *Adnaria* Raf. (1817)

<i>Halenia</i> Borkh. (1796)	<i>Tetragonanthus</i> S. G. Gmel. (1769)
<i>Calystegia</i> R. Br. (1810)	<i>Volvulus</i> Med[ic]. 1791)
<i>Ellisia</i> L. (1763)	<i>Macrocalyx</i> Trew (1761)
<i>Amsinckia</i> Lehm. (1831)	<i>Benthamia</i> Lindl. (1830)
<i>Mertensia</i> Roth. (1797)	<i>Pneumaria</i> Hill (1764)
<i>Pycnanthemum</i> L. C. Rich. (1803)	<i>Furera</i> Adans. (1763)
	<i>Koellia</i> Moench (1794)
<i>Nicandra</i> Adans. (1763)	<i>Pentagonia</i> Heist. ex Fabr. (1759)
	<i>Physaloides</i> Boehm. (1760)
<i>Epiphegus</i> Nutt. (1818)	<i>Leptamnium</i> Raf. (1818)
<i>Fedia</i> Moench (1794)	<i>Mitrophora</i> Neck. (1790)
<i>Echinocystis</i> Torr. & Gray (1840)	<i>Micrampelis</i> Raf. (1808)
<i>Vernonia</i> Schreb. (1791)	<i>Behen</i> Hill (1762)
<i>Mikania</i> Willd. (1803-1804)	<i>Willugbaeya</i> Neck. (1790)
	<i>Carelia</i> Cav. (1802)
<i>Liatris</i> Schreb. (1791)	<i>Laciniaria</i> Hill (1762)
	<i>Psilosanthus</i> Neck. (1790)
<i>Chrysopsis</i> Ell. (1824)	<i>Diplogon</i> Raf. (1818)
<i>Haplopappus</i> Cass. (1828)	<i>Hoorebeckia</i> Cornelissen (1817)
<i>Silybum</i> Adans. (1763)	<i>Mariana</i> Hill (1762)
<i>Cnicus</i> Gaertn. <sup>1</sup> (1791)	<i>Carbenia</i> Adans. (1763)
<i>Krigia</i> Schreb. (1791)	<i>Adopogon</i> Neck. (1790)
<i>Taraxacum</i> Wiggers (1780)	<i>Hedypnois</i> Scop. (1772)

[<sup>1</sup> It should be noticed that this ruling is to the effect that the name *Cnicus*, employed by Linnaeus for a considerable aggregate, should be restricted, as by Gaertner, to *Cnicus benedictus* and any plants regarded as congeneric with it. As a result our ordinary thistles with plumose pappus may bear the name *Cirsium* Adans., and the species with simple pappus the name *Carduus* L. The degree to which the latter groups may be regarded as separate genera is of course still a matter of individual opinion.—Ed.]



## NOTES ON NEW ENGLAND HEPATICAE, —V.

ALEXANDER W. EVANS.

(Plate 73.)

Of the species noted below the first three are introduced for nomenclatorial reasons. The paper also records additions to the hepatic flora of each New England state except Rhode Island. The majority of these additions belong to either *Lophozia* or *Calypogeia*, one species in the latter genus being elevated from varietal rank. For the sake of comparison the two species of *Calypogeia* already known from New England are also discussed. The reasons for discarding the generic name *Kantia* in favor of *Calypogeia* are stated by the writer in another connection.<sup>1</sup>

1. **Ricciella Sullivantii** (Aust.) comb. nov. *Riccia Sullivantii* Aust. Proc. Acad. Nat. Sci. Phil. 1869: 233. *Riccia fluitans*, var. *Sullivantii* Aust.; Underwood, Bull. Illinois State Lab. Nat. Hist. 2: 28. 1884. *Riccia Huebeneriana* Underw. Bot. Gazette 19: 276. 1894 (not Lindenb.). The genus *Ricciella* was proposed by A. Braun in 1821<sup>2</sup> for the reception of *Riccia fluitans* L. and *Riccia canaliculata* Hoffm., both of which are now considered forms of the same species. It was based on the fact that the capsules protruded from the lower surface of the thallus, instead of from the upper, as in more typical species of *Riccia*. For a long time it received but slight recognition, although both Trevisan and Dumortier accepted it without question. It has also been accepted by Stephani, at first as a genus and afterwards as a subgenus under *Riccia*.<sup>3</sup> Instead, however, of relying upon the original characters of Braun, he bases his division on differences in the structure of the thallus. In *Riccia* proper, as he defines it, the photosynthetic layer consists of rows of cells extending at right angles to the epidermis; these are loosely connected longitudinally and enclose air chambers in the form of narrow canals. In *Ricciella* the air chambers are more irregular and are separated by plates of cells. Warnstorf<sup>4</sup> adopts *Ricciella* as a genus on the basis of Stephani's characterization, a procedure which seems to be entirely

<sup>1</sup> Bryologist 10: 24-30. 1907.

<sup>2</sup> Flora 4: 756. 1821.

<sup>3</sup> Bull. de l'Herb. Boissier I. 6: 361. 1898.

<sup>4</sup> Kryptogamenfl. der Mark Brandenburg 1: 80. 1903.

warranted. In addition to *R. Sullivantii* two other species of *Ricciella* are known from New England, namely, *R. crystallina* (L.) Warnst. and the type of the genus, *R. fluitans* (L.) A. Br. *R. crystallina* has been found in Connecticut only, but the other two have been reported from each New England state except New Hampshire.

2. **Marsupella Sullivantii** (DeNot.) comb. nov. *Sarcoscyphus sphacelatus*, var. *medius* Gottsche (in part), 1860. *S. Sullivantii* De Not., 1861. *S. Ehrharti*, var. *erythrorhizus* Limpr., 1876. *Marsupella erythrorhiza* Schiffn., 1901. *M. media* Schiffn. (as synonym), 1901.<sup>1</sup> The 49th Article of the Vienna Rules of Nomenclature<sup>2</sup> includes the following statement: when . . . a subdivision of a species becomes a species . . . the earliest name received by the group in its new position must be regarded as valid. Applying this rule to the present species it is perfectly evident that *Sarcoscyphus Sullivantii* was the earliest name received by Gottsche's var. *medius* of *S. sphacelatus*, upon its elevation to specific rank. The name *Sullivantii* must therefore be regarded as valid and must be retained when the species is transferred to *Marsupella*. Precisely the same conclusion would be reached by applying the American Association Code of Botanical Nomenclature as recently revised. Specimens of *M. Sullivantii* have recently been received from various localities in the White Mountains, New Hampshire (*W. G. Farlow*), and from Southington, Connecticut (*Miss Lorenz*). It has not yet been reported, however, from either Vermont or Rhode Island.

3. **NARDIA GEOSCYPHUS** (De Not.) Lindb.; Carrington, British Hepat. 27. 1874. *Jungermannia scalaris*  $\beta$  *minor* Nees, Naturgeschichte der europ. Leberm. 1: 281. 1833. *Alicularia scalaris*  $\beta$  *minor* Nees, l. c. 2: 449. 1836. *Jungermannia haematosticta* Nees, l. c. 2: 453 (in note). 1836. *Alicularia Geoscyphus* De Not. Mem. R. Accad. Sci. di Torino II. 18: 486. f. III (1-13). 1859. *Jungermannia Silvrettae* Gottsche; G. & R. Hep. Eur. Exsic. 470. 1869 (without description). *Nardia repanda* Lindb.; Carrington, British Hepat. 27. 1874 (not *Jungermannia scalaris*  $\beta$  *repanda* Hüb. Hep. Germ. 81. 1834). *Marsupella Silvrettae* Dumort. Hep. Europ. 128. 1874. *Alicularia minor* Limpr.; Cohn, Kryptogamenfl. von Schlesien 1: 251. 1876. *Nardia haematosticta* Lindb. Musc. Scand. 8. 1879.

<sup>1</sup> For fuller references and additional synonyms see the writer's earlier notes on *Marsupella media* in RHODORA 6: 167. 1904.

<sup>2</sup> International Rules of Botanical Nomenclature adopted by the International Botanical Congress of Vienna 1905. Jena, 1906.

*N. insecta* Lindb. l. c. *Jungermannia dovrensis* Limpr. Jahresb. Schlesischen Ges. für vaterl. Cultur **61**: 10. 1884. *Nardia minor* Arn. Lebermoosstudien im nordl. Norwegen 39. 1892. *N. Silvrettae* Pears. Hepat. British Isles 372. pl. 172. 1901. *Mesophylla minor* Corb.; Bouvet, Bull. Soc. d'Étud. Scient. d'Angers for 1902: 189. 1903. Judging from the above synonymy the specific name *haematosticta* is apparently available for the present species, and Lindberg's combination *Nardia haematosticta* has been rather extensively adopted.<sup>1</sup> *Jungermannia haematosticta* Nees, however, was never effectively published by its author, according to either the Vienna Rules or the Association Code, both of which state that incidental mention of a name is not publication. The note referred to in which the name appears is given under *Alicularia scalaris*  $\beta$  *minor* and states that Nees von Esenbeck had formerly sent specimens of this variety to his friends under the name *Jungermannia haematosticta*. This cannot be considered as anything more than incidental mention, even though the implication is made that the plant might perhaps be regarded as worthy of specific rank. The name must therefore be discarded, and the species must bear the later name *Geoscyphus* of De Notaris, according to the 49th Article of the Vienna Rules. As originally proposed this name had a substantive form and did not agree in gender with the generic name *Alicularia*. Some of the later writers who have used it have changed it to an adjective form, but this course can hardly be warranted. It should also be noted that Trevisan<sup>2</sup> published the combination *Nardia Geoscyphus* in the same year as Lindberg, but apparently later in the year because Massalongo<sup>3</sup> quotes Lindberg rather than Trevisan as the author of the name. According to Stephani<sup>2</sup> *Alicularia Rotaeana* De Not. (Mem. R. Accad. Sci. di Torino II. **18**: 484. f. II [1-14]. 1859) is also a synonym of the present species,<sup>2</sup> but Massalongo<sup>4</sup> considers it a form of *Nardia scalaris* (Schrad.) S. F. Gray instead, and the figures of De Notaris certainly give strong support to this latter view. *Nardia Geoscyphus* was first recorded as a New England plant from specimens collected along the Crawford Bridle Path in the White Mountains. It has

<sup>1</sup> A full description of the species under this name was published by the writer in Proc. Wash. Acad. **2**: 296. 1900. See also RHODORA **4**: 209. 1902; and **5**: 172. 1903.

<sup>2</sup> Rend. R. Ist. Lomb. di Sci. e Lett. II. **2**: 784. 1874.

<sup>3</sup> Ann. R. Ist. Bot. di Roma **3**: (5). 1888.

<sup>4</sup> Bull. de l'Herb. Boissier II. **2**: 40. 1902.



since been found at Franconia, New Hampshire (*W. G. Farlow*), and at West Newbury, Massachusetts (*Miss Haynes*). The lowland specimens bear leaves which are more or less bilobed and therefore represent the *Nardia insecta* of Lindberg. European writers, however, do not consider this plant a distinct species at the present time.

4. *LOPHOZIA CONFERTIFOLIA* Schiffn. Oesterr. Bot. Zeitschr. 55: 47. 1905. Mt. Katahdin, Maine (*Cowles Party*, 20). Determination confirmed by Schiffner.<sup>3</sup> The species is apparently confined to alpine regions, where it grows on peaty soil or on stones covered with earth. Until the present time it was known from only four European localities, three in Austria and one in Switzerland, and its detection in New England is therefore of considerable interest. *L. confertifolia* belongs to the *ventricosa*-group, and its author compares it with *L. alpestris* (Schleich.) Evans and *L. Wenzelii* (Nees) Steph. It is characterized by its densely tufted habit and by the fact that its leaves are closely imbricated and concave. Its color is a dull green, more or less tinged with brown or red. The leaves are broadly elliptical and bifid one third or less with a lunulate to obtuse sinus and broad obtuse or subacute lobes. The leaf-cells have small but distinct triangular trigones and their walls are otherwise thin though often pigmented. In the middle of the leaf the cells average about 23  $\mu$  in diameter, agreeing in this respect with the cells in *L. ventricosa* but being considerably larger than those of *L. alpestris*. The Maine specimens agree closely with those distributed by Schiffner.

5. *LOPHOZIA LONGIDENS* (Lindb.) Macoun, Cat. Canadian Pl. 7: 18. 1902. *Jungermannia porphyroleuca* *f. attenuata* Nees, Naturgeschichte der europ. Lebern. 2: 80. 1836. *Jungermannia longidens* Lindb. Musc. Scand. 7. 1879. Streaked Mountain, Hebron, Maine (*J. A. Allen*, 5). Chocorua (Whidden's Pond), Mt. Adams and Mt. Pemigewasset, New Hampshire (*W. G. Farlow*). The Chocorua specimens were determined by Schiffner. *L. longidens* was first recorded as a North American species by Macoun, who found it on wet rocks in the Smoky Mountains of Cape Breton, Nova Scotia. It has a wide distribution in Europe and has also been collected in Siberia. Schiffner considers it one of the most clearly marked members of the *ventricosa*-group, but Stephani looks upon it as a simple synonym of *L. ventricosa*. The writer is disposed to accept

<sup>3</sup> See Oesterr. Bot. Zeitschr. 56: 26. 1906. Both the present species and the following are here recorded from New England for the first time.

the opinion of Schiffner. *L. longidens* grows in rather loose tufts and is either dull green in color or more or less tinged with brown or yellow. It is more delicate in texture than most of its allies, the leaf-cells being thin-walled except for their minute trigones. The leaves are ovate-quadrate or ovate-rectangular in outline and are bifid one third or less with an obtuse sinus. The divisions of the leaves are narrowly triangular and acute, rarely diverging from each other to any extent. The species rarely fruits but usually develops gemmiparous branches which are among its most striking features. These branches are ascending or erect and their crowded leaves are almost transversely attached. They spread obliquely from the axis but are frequently squarrose in the outer part. The gemmae are borne in small clusters at the tips of the lobes; they are globoid or short-ellipsoid in form, sometimes with obscure angles, and are either unicellular or bicellular. In color the gemmae are normally reddish brown, but the New Hampshire specimens bear green gemmae and Schiffner states that he has observed a similar condition among European specimens. Probably the lack of pigmentation in these cases is due to the fact that the plants were deeply shaded. *L. longidens* seems to attain its best development on rocks but it also occurs on logs; it is apparently confined to alpine or subalpine localities.

(To be continued.)

QUERCUS PRINOIDES WILLD. VAR. RUFESCENS  
VAR. NOV.

ALFRED REHDER.

IN the spring of 1903 Mr. F. G. Floyd drew my attention to a peculiar shrubby Oak he had discovered the year before on the island of Nantucket. I subsequently visited the island myself and found the shrub in question in the locality indicated by Mr. Floyd. It grows there in the low thickets of Scrub Oak consisting of *Quercus prinoides* and *ilicifolia* and covering a large part of the higher rolling land between Nantucket and Siasconset, but occurs only as scattered bushes between the other Oaks. In general appearance it resembles most the *Q. prinoides*, but differs in the villous and rufous or rather fulvous pubescence which covers the under side of the leaves and

the young branches. This pubescence and the locality suggested at first sight a possible cross between *Q. prinoides* and *ilicifolia*, but as all the other characters of the form are those of *Q. prinoides*, this idea had to be abandoned; moreover, no cross has as yet been observed between a Black and a White Oak. No mention of a *Q. prinoides* with the pubescence described could be found in literature, but in looking through the Gray Herbarium and the herbaria of the Arnold Arboretum and of the New England Botanical Club I found at least two specimens which undoubtedly belonged to this form, one from Cape Cod and one from the Pine barrens of New Jersey so that it may be considered a coast form of *Q. prinoides*, and as it differs also in a few other characters from the type, it seems to deserve a varietal designation and may be distinguished as

*QUERCUS PRINOIDES* Willd. var. ***rufescens*** var. nov.

A typo recedit foliis subtus non solum albo-tomentosis sed etiam fulvescenti-villosis praecipue secus costam mediam ramulisque hornotinis fulvescenti-pubescentibus, foliorum lobis acutiusculis mucrone calloso instructis, etiam foliis obovatis quam ea formi typici omnino minoribus et latoribus saepe undulatis.

The variety differs from the type in the leaves having beneath besides the close white tomentum a woolly yellowish pubescence particularly along the midrib and in the branches being pubescent at least when young. The leaves are generally smaller are broader and obovate with acutish callous-tipped lobes and often undulate margin.

MASSACHUSETTS: Nantucket Island, between Nantucket and Siasconset, Sept. 1902, *F. G. Floyd*; August 29, 1903, *Alfred Rehder*; Cape Cod, Centreville, damp woods, July 14, 1903, *Clara Imogene Cheney*; NEW JERSEY: Pine barrens of Manchester, August 26, 1852, *A. C. Hexamer*. The following specimens must also be referred to this variety, though they are somewhat deviating from its type. New Jersey, Pine barrens (Herb. Gray) differs in its larger leaves; Massachusetts, Jamaica Plain, 1887, *C. E. Faxon*, has leaves with a slighter villous pubescence; North Carolina, Dunsmore, Buncombe Co., September 21, 1897, *Biltmore Herb.* No. 828<sup>b</sup>, has less villous and longer and narrower leaves and comes from the mountains of western North Carolina.

The typical *Quercus prinoides* has the generally larger and often oblong-obovate or even oblong leaves more gradually narrowed toward the apex and covered beneath with a close whitish tomentum, which is sometimes reduced to scattered stellate hairs; the branchlets



are glabrous. Intermediate forms between the species and the variety are in Nantucket always associated with plants representing the type of the variety.

ARNOLD ARBORETUM.

## AN INTERESTING LOCALITY.

E. B. HARGER.

PISTAPAUG (or PAUG) POND is a natural pond of manifest glacial origin, about three-fourths of a mile long and a third as broad lying at the intersection of the four towns of North Branford, Guilford, Wallingford and Durham about twelve miles northeasterly from New Haven, Connecticut. It is mostly within the limits of Wallingford and Durham about one-half in each. On the east of the pond (the Durham side), one of the characteristic trap-ridges of the region, known as Pistapaug Mountain rises from the water's edge more than 200 feet above the pond which itself is at an elevation of some 400 feet above sea level. To the northwest is another trap hill; and a highway skirts closely the northern border of the pond and runs through the pass between the two hills. Westward is a broad tract of cleared land and to the south lie low wooded hills, where doubtless runs the old valley now dammed with glacial drift.

In the spring of 1903 I found in the Eaton Herbarium at New Haven a specimen of *Polymnia Canadensis* L., collected in 1880 by Prof. O. D. Allen and labeled "Trap slide near Paug Pond, Durham, "Conn." I immediately formed the resolution of exploring the region, but had no opportunity of doing so until Sept. 15, 1905. On this trip, almost at the first sight of a "trap slide" I found the *Polymnia*, but on the Wallingford side of the pond. However, on crossing to the slopes of Pistapaug Mountain I found the plant in great abundance, both near the foot and near the top of the talus-slope, which here runs directly into the water. The remoteness of the locality from houses and the extent of territory over which the plant is spread seem to indicate that is not of recent introduction, but may be considered native to Connecticut.

Although the main object of the trip was fulfilled by the re-discovery of *Polymnia*, the further results were very gratifying. At the base

of the mountain, east of the head of the pond, were found two small patches of *Arenaria macrophylla* Hook., the second station in the state. Mr. Bartlett's station (RHODORA 7: 20) is five or six miles distant. Near the *Arenaria* grow *Phegopteris Dryopteris* Fée. and *Stellaria borealis* Bigelow, and a short distance south I found a quantity of *Pyrus Americana* DC. in full fruit, perhaps the most southerly station in the state. From the pond itself I collected *Bidens Beckii* Torr., *Potamogeton praelongus* Wulf. and *Heteranthera graminea* Vahl., the last in good flower. By the roadside, perhaps one-fourth of a mile west, a colony of *Cuphea viscosissima* Jacq. reached the best development that I have noted in this state.

As on the first trip I had only about two hours for exploration, the results seemed to justify another expedition, which was undertaken, in company with Prof. A. W. Evans, on May 30, 1906. On reaching the station noted above for *Cuphea*, we found a pool near by which was covered with a profusion of *Hottonia inflata* Ell. in flower. A little farther on in a small bog we found a few plants of *Epilobium strictum* Muhl., growing with a sedge, which later investigation showed to be *Carex brunnescens* (Pers.) Poir., and in cleared ground at the head of the pond, a quantity of *Hieracium floribundum* Wimm.

&. Grab. a species which has only recently been reported from the state but seems to be spreading. After searching in vain for the *Arenaria* I climbed the cliff to the top of the mountain, while Prof. Evans searched for *Hepaticae* on the slopes. I was rewarded for the rather stiff climb by the discovery of *Carex eburnea* Boott, a species previously known from Connecticut only from the limestone region of Litchfield County and from the neighborhood of Southington. Later we found *Lycopodium annotinum* L., on the borders of a swamp a few hundred feet north of the pond, an extension of range southeasterly of some forty miles. Here were also *Cornus Canadensis* L. and *Clematis verticillaris* DC. After tracing the *Polymnia* some quarter of a mile northerly from the place where it was found in September, we left the locality.

In addition to the plants noted above a peculiar gooseberry was found on the first expedition, which, after comparison at New Haven and at the Gray Herbarium, was thought to be *Ribes lacustre* Poir., and was so reported at the winter meeting of the Connecticut Botanical Society. On collection of flowers and young fruit it proved to be a form of *R. oxyacanthoides* L. peculiar in its almost spineless but

densely weak-prickly or hispid semi-prostrate stems, which seldom use more than 2-3 dm. above the ground.

OXFORD, CONNECTICUT.

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POLYTRICHUM GRACILE DICKS. IN MAINE.—In one of the wooded swamps at Middle Dam, Rangeley Lakes, Maine, there was found in Sept., 1906, one small clump of Polytrichum with leaves resembling those of *Catharinea angustata*. Prof. J. Franklin Collins, to whom the moss was sent, determined it as *P. gracile* Dicks. According to him, it is not the typical form, but agrees with one of the variations noted in Dixon and Jameson's Handbook of British mosses. The leaf-margins are about three times wider than in the type, and the lamellae are only three cells high instead of four or five. Prof. Collins has not been able to learn of any previous collection of this species in Maine.—ELIZABETH MARIE DUNHAM.

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